WHAT IS CLAIMED IS:

1. A method of making nanoparticles of a copper/zinc (Cu/Zn) alloy comprising:

mounting one or more targets in a chamber;

vaporizing material from each of the one or more targets by subjecting each of the one or more targets to a beam of laser energy to form a vapor; and

condensing the vapor to form the Cu/Zn alloy nanoparticles.

2. The method according to claim 1, wherein the one or more targets comprises a single target comprising a Cu/Zn alloy.

3. The method according to claim 2, wherein the single target comprises a Cu/Zn alloy wrapped in zinc.

4. The method according to claim 2, wherein the single target is a compact comprising copper and zinc powders or a compact comprising brass and zinc powders.

5. The method according to claim 1, wherein the Cu/Zn alloy nanoparticles have an average particle size of less than about 20 nm.

6. The method according to claim 1, wherein the laser is a YAG-Nd laser and wherein the emission from the laser comprises the second harmonic at a wavelength of 532 nm.

7. The method according to claim 1, wherein the laser energy is pulsed.

8. The method according to claim 7, wherein the pulses of laser energy have a duration of about 10 nanoseconds.

9. The method according to claim 7, wherein each pulse of laser energy delivers from 20 - 40 mJ of energy to the target.

10. The method according to claim 1, wherein the nanoparticles are formed in the presence of an electric field and wherein the nanoparticles comprise filaments, nanowires or nanotubes.

11. The method according to claim 10, wherein the nanoparticles have an aspect ratio greater than 1.

12. The method according to claim 10, wherein the electric field is applied at 30 to 300 V/cm.

13. The method according to claim 1, wherein the vaporization and condensing are carried out in a diffusion cloud chamber.

14. The method according to claim 13, wherein the diffusion cloud chamber comprises an upper portion and a lower portion and wherein the upper portion is maintained at a lower temperature than the lower portion such that the nanoparticles condense in the upper portion.

15. The method according to claim 1, wherein an inert carrier gas or a reactive mixture comprising an inert carrier gas and a reactive gas is added to the chamber.

16. The method according to claim 15, wherein the inert carrier gas is helium or argon.

17. The method according to claim 15, wherein the reactive mixture comprises an inert gas and isobutene.

18. The method according to claim 15, wherein the reactive mixture comprises oxygen and an inert gas and wherein the nanoparticles comprise one or more oxides of copper and/or zinc.

19. The method according to claim 18, wherein the nanoparticles comprising one or more oxides of copper and/or zinc are CuO, ZnO, or Cu_2O.

20. The method according to claim 1, wherein the nanoparticles comprise intermetallic compounds of copper and zinc.

21. The method according to claim 20, wherein the intermetallic compounds comprise Cu_5Zn_8 and/or $CuZn_5$.

22. The method according to claim 1, wherein the one or more targets comprises a first target comprising copper and a second target comprising zinc, the method further comprising steps of:

splitting the beam of laser energy into a first beam and a second beam of laser energy;

subjecting the first target to the first beam of laser energy to form a first vapor;

subjecting the second target to the second beam of laser energy to form a second vapor;

mixing the first and second vapors; and

condensing the mixed vapors to form the Cu/Zn alloy nanoparticles.

23. The method according to claim 1, wherein the beam of laser energy is moved relative to the one or more targets.

24. The method according to claim 1, wherein pressure in the chamber is maintained in the range of 10^{-3} to 10^{4} torr during the vaporization step.

25. The method according to claim 1, further comprising maintaining a temperature gradient in the chamber during the vaporization step.

26. The method according to claim 1, wherein pressure in the chamber during vaporization is maintained above atmospheric pressure.

27. A method of making nanoparticles of copper (Cu) comprising:

mounting one or more targets in a chamber, at least one of the targets comprising a first target comprising copper;

vaporizing material from at least one of the one or more targets by subjecting the at least one target to a beam of laser energy to form a first vapor; and

condensing the first vapor to form the Cu nanoparticles.

28. The method according to claim 1, further comprising steps of:

optionally mixing the first vapor and a second vapor,

wherein the second vapor is an inert carrier gas or a reactive mixture comprising an inert carrier gas and a reactive gas and the Cu nanoparticles comprise one or more oxides of copper.

29. A method of making nanoparticles of zinc (Zn) comprising:

mounting one or more targets in a chamber, at least one of the targets comprising a first target comprising zinc;

vaporizing material from at least one of the one or more targets by subjecting the at least one target to a beam of laser energy to form a first vapor; and

condensing the first vapor to form the Zn nanoparticles.

30. The method according to claim 29, further comprising steps of:

optionally mixing the first vapor and a second vapor,

wherein the second vapor is an inert carrier gas or a reactive mixture comprising an inert carrier gas and a reactive gas and the Zn nanoparticles comprise one or more oxides of zinc.

31. A nanosized particle of Cu/Zn alloy having an average particle size of $\leq$ 20 nm, wherein the nanosized particle is condensed from a laser vaporized material.

32. The nanosized particle of claim 31, wherein the average particle size is less than about 20 nm.

33. The nanosized particle of claim 31, wherein the nanosized particles comprise one or more intermetallic compounds of copper and zinc.

34. The nanosized particle of claim 33, wherein the intermetallic compounds comprise Cu_5Zn_8 and/or $CuZn_5$.

35. A nanosized particle produced by condensation of material from a laser vaporization of first and/or second targets, wherein a first target comprises copper and a second target comprises zinc.

36. The nanosized particles of claim 35, wherein the nanosized particles comprise one or more intermetallic compounds of copper and zinc.

37. The nanosized particle of claim 36, wherein the intermetallic compounds comprise Cu_5Zn_8 and/or $CuZn_5$.

38. A supported catalytic structure comprising:

a catalytic structure; and

a catalyst,

wherein the catalyst comprises a plurality of nanoparticles of Cu, Zn or Cu/Zn formed by the process of laser vaporization with controlled condensation.